

Tennessee Pollution Prevention Partnership Success Story



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Bekaert Diverts Waste Acid

The Member

Bekaert Corporation – Dyersburg began operations in Dyersburg, TN in 1988. Today, this Bekaert plant employs approximately 280 team members and manufactures steel cord for steel belted radial tires. Bekaert Corporation is a European company, headquartered in Belgium, employing 16,400 people globally in 120 countries. Bekaert is committed to environmental excellence through legal compliance, minimization of environmental impacts, rational use of resources and energy, commitment to stakeholders, and environmental considerations through technological advancements.



The Story

Bekaert North America's steel cord facilities utilize hydrochloric acid to clean wire prior to coating, which prevents oxidation. When the wire, which contains iron, goes into the hydrochloric acid cleaning bath, a chemical reaction with the steel cord and hydrochloric acid produces ferrous chloride. This manufacturing process produces a continuous flow of acid that is metered through a valve into a cleaning bath that results in a continuous flow to Bekaert's wastewater treatment system. This concentrated hydrochloric acid was historically treated at a rate of approximately 1000 gallons per day. Sodium hydroxide was used in the waste treatment process to neutralize the solution. At the final stage, the treated solution was run through a filter press with the sludge going to a landfill and the effluent going to the Dyersburg POTW. Because of the high volume of flow to wastewater treatment,

Bekaert had to operate the treatment system 24 hours/day, 7 days/week. The environmental team conducted numerous studies and discovered that the ferrous chloride being produced could be used as a product if the iron content were high enough.

The Success

Bekaert Corporation – Dyersburg started looking at how they could segregate this ferrous chloride material from the other flows going to wastewater treatment. They also had the challenge of increasing the iron content of the material. Once the environmental team developed a concept, the facility was re-plumbed and tanks were installed to capture the ferrous chloride and accumulate for pick-up. To solve the low iron content dilemma, flow meters were installed on the baths, which decreased the amount of hydrochloric acid allowing for a higher concentration of iron.

The process was further modified so that when baths were cleaned, the acid was pumped into totes allowing the bath to be cleaned and then the acid pumped back into the baths. Through these process changes, Bekaert was able to decrease their acid usage by one third, which in turn, increased their iron concentration. The other Bekaert North America plants followed the Dyersburg model and the North American Environmental Manager negotiated a corporate contract with an outside company to transport the "ferrous chloride product" to facilities that use it for wastewater treatment.

The Pollution Prevented

In 2004, 365,000 gallons of waste process acid were diverted from treatment with a cost savings of \$1000.00. This saved our facility over \$300,000 in material costs that year plus we also diverted 270 tons of material from the landfill and saved associated costs of \$5400.00. We cut our operation down from 4 wastewater treatment operators to 2 operators and now run a 12hr/day operation.

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